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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/661,757

09/12/2003

Christopher K. Davey

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02/08/2007

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EXAMINER

OLSEN, KAJ K

ART UNIT

PAPER NUMBER

1753

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/661,757	Applicant(s) DAVEY ET AL.	
	Examiner Kaj K. Olsen	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7-24-06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 1 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. In claim 1, “said heating coils” is confusing because the claim only set forth a singular heating coil.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
5. Claims 1, 3, and 6-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimasaki et al (USP 5,740,675).
6. Shimasaki discloses a system and method for determining a temperature of exhaust gas from an engine comprising an exhaust gas sensor 52 having an electric heating coil where said sensor communicates with exhaust gas, an electrical circuit for generating a signal indicative of the resistances of said heating coil when said coil is not energized, and a controller receiving said

Art Unit: 1753

signal and calculating said temperature of said exhaust gas based on said signal. See fig. 1, abstract, and col. 5, l. 66 through col. 6, l. 40. See also fig. 12 and 13 and col. 7, l. 39 through col. 8, l. 7 for an embodiment where an infinitesimal current is utilized (i.e. the heater is not energized).

7. With respect to determining the oxygen content as well, the oxygen sensor is clearly also being utilized to determine the oxygen content of the exhaust gas as well. See the abstract. Furthermore, the temperature is being determined just after engine ignition and before the engine has warmed up (i.e. prior to the coolant temperature reaching a predetermined value). See fig. 2 and col. 5, l. 48 through col. 6, l. 16.

8. With respect to comparing a first exhaust gas temperature to a second exhaust gas temperature, Shimasaki shows in fig. 4 shows a comparison between different resistance values at different exhaust gas temperatures. This would read on the broadly defined comparing of a first exhaust temperature with a second exhaust temperature.

9. With respect to an additional oxygen sensor upstream from the catalyst, Shimasaki disclose an oxygen sensor 50 upstream from the catalysts (20, 22) with oxygen sensor 52 being downstream from these catalysts. See fig. 1 and col. 4, ll. 19-35.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimasaki in view of Takeuchi et al (USP 4524,264).

13. Shimasaki discloses all the limitations of the claims, but did not explicitly recite the use of a Wheatstone bridge circuit operably coupled to the gas sensor. Takeuchi teaches that the heater of a gas sensor can be placed within a Wheatstone bridge to regulate the power supplied to the heater such that a constant temperature for the heater is established. See fig. 4 and col. 6, ll. 48-68. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Takeuchi for the system of Shimasaki so as to provide a well-regulated and consistent temperature.

14. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jelden et al (USP 5,592,815) in view of Shimasaki.

15. Jelden discloses a system for determining a temperature difference of exhaust gas comprising a first temperature sensor 4 communicating with exhaust gas upstream of the catalyst 3 generating a first temperature signal, a second temperature sensor 5 communicating with exhaust gas downstream of the catalyst generating a second temperature signal, and a controller

Art Unit: 1753

calculating a temperature difference between exhaust gas communicating with said first and second temperature sensors based on the first and second signals. See fig. 1 and col. 4, ll. 10-58. Jelden does not explicitly disclose the use of first and second exhaust gas sensors for the generation of the temperature signals, particularly the use of the heating coil of an exhaust gas sensor. Shimasaki discloses that a separate temperature sensor for monitoring temperature is not necessary because one can rely on a measurement of the heater coil resistance from an oxygen sensor, which Shimasaki teaches that most internal combustion engines are already equipped with anyway. See the abstract, col. 1, ll. 23-56, and col. 5, l. 66 through col. 6, l. 40. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Shimasaki for the system of Jelden so as to provide simultaneous oxygen and temperature sensing without requiring separate temperature and oxygen sensors.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. McMackin et al (USP 6,432,287) teaches the use of a temperature sensor that is attached to an exhaust gas sensor.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Friday from 8:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AU 1753
February 2, 2007



KAJ K. OLSEN
PRIMARY EXAMINER